

outside competition, with Alcidæ, shore-birds, land-birds, etc. It is difficult to believe that a Gull of the size of an Albatross would find a place inland or shore-wise, available food being preëmpted by vultures, mammals, etc., and there being few available safe nesting-places for birds even as large and clumsy as a Pelican. The only chance such a form would have to pick up a living, would be over wide stretches of sea. As one would expect, the Tubinares, not the Longipennes, have filled this sea gap, the sea being their especial field.

At the other end of the line, inland Terns, if of much smaller size, would meet an increasingly strong competition for food with the host of smaller land-birds. For instance, a minute species with habits similar to those of the Black Tern would come in direct competition with Swallows and other insectivores. Small pelagic species would have difficulty in finding proper nesting sites, partly from the abundance of the Alcidæ in the north. It is interesting that the small, abundant Wilson's Petrel, nesting in the southern hemisphere in summer, crosses to the northern hemisphere and helps fill the hiatus left over the north Atlantic by Gulls, Phalaropes and Alcidæ when these are necessarily ashore, breeding in the northern summer.

The presupposed case would be a comparative unity in the size of the Longipennes, which the facts seem to show.

In conclusion, great variation in size and predominance of certain periodic sizes is a definite character of the order Tubinares, which may be explained by intra-ordinal competition.

---

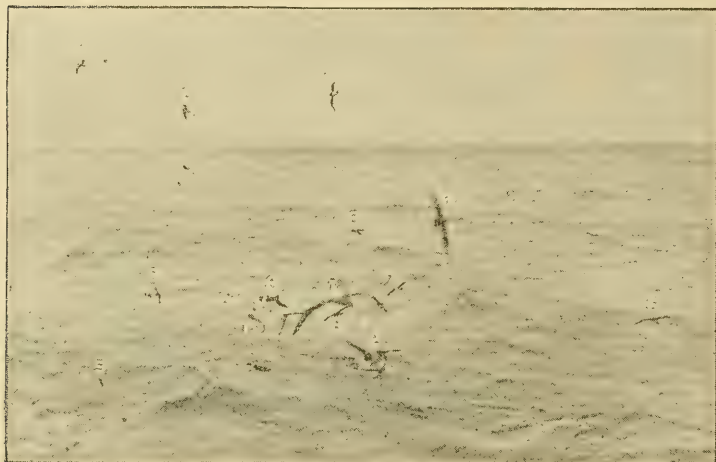
XVI.—*A Flock of Tubinares.* By ROBERT CUSHMAN MURPHY, Ph.B., Brooklyn Museum, New York City.

(Text-figure 5.)

THE accompanying photograph of a flock of Tubinares was taken by the writer on the 4th of November, 1912, in latitude 32° 28' S., longitude 45° 42' W., in the south Atlantic

Ocean. Nine species can be identified in the picture, and several additional species were in the same flock within a few moments of when the shutter was released.

Text-fig. 5.



Photograph of Tubinares.

The birds photographed comprise the following species:—

- |         |  |           |     |
|---------|--|-----------|-----|
| Fig. 1. | <i>Diomedea exulans</i>                        | . . . . . | (2) |
| „ 2.    | <i>Diomedea melanophrys</i>                    | . . . . . | (1) |
| „ 3.    | <i>Phæbetria cornicoides</i>                   | . . . . . | (2) |
| „ 4.    | <i>Macronectes gigantea</i>                    | . . . . . | (1) |
| „ 5.    | <i>Puffinus anglorum</i>                       | . . . . . | (1) |
| „ 6.    | <i>Æstrelata incerta</i>                       | . . . . . | (3) |
| „ 7.    | <i>Priofinus cinereus</i>                      | . . . . . | (1) |
| „ 8.    | <i>Procellaria (= Majaqueus) æquinoctialis</i> |           | (2) |
| „ 9.    | <i>Oceanites oceanicus</i>                     | . . . . . | (1) |

A strong northwest wind was blowing at the time the picture was made, and flocks of Tubinares followed our brig southward all day in pursuit of bits of pork-fat and logger-head-turtle meat which we trailed from the stern. In addition to the nine species of birds named above, we saw

one or more individuals of *Thalassogeron chlororhynchus*, *Daption capensis*, *Halobæna cœrulea*, and *Fregetta grallaria*.

We caught many of the birds on fishhooks, hauling them down from the air as animated kites, or, in the case of the larger, heavier species, dragging them in along the surface of the water. A Giant Petrel (*Macronectes*) was the first to fall a victim, after which we captured specimens of *Diomedea exulans*, *Puffinus anglorum*, *Procellaria æquinoctialis*, and *Daption*. The "Cape hens" (*P. æquinoctialis*) were very aggressive, driving the Shearwaters and smaller Petrels away from the trailing bait, diving beneath the surface in their efforts to seize it, and even fighting with the Albatrosses and *Macronectes*. Whenever the vessel paused in her course for an instant, owing to the rolling seas, there would be a tremendous hurly-burly of birds battling over the treacherous bait.

The photograph thoroughly demonstrates how clearly the diagnostic characters of birds can be shown in even a brief and distant glimpse. For except in the case of the bird I have labelled *Puffinus anglorum*, an ornithologist familiar with living Tubinares could identify almost every bird in the picture. Particularly characteristic are the poses of *Profinus* (No. 7) and *Phæbetria* (No. 3), even though the actual pictures are minute and scarcely more than silhouettes. The blurred *Macronectes*, also, "standing on end" and wheeling, has a certain stiffness and straightness of wing which the field-student of Tubinares will recognize at once as being peculiar to the species.

---

### XVII.—Obituary.

#### GERALD EDWIN HAMILTON BARRETT-HAMILTON.

It is with great regret that we have to record the sudden death, by heart failure, of Major Barrett-Hamilton, M.B.O.U., in South Georgia, in the Antarctic, on January the 17th. At the end of last year he had been commissioned by the